ATTO DYES

Properties, Constants & Formulas

Optical Properties of Atto dyes

Label	λ_{abs} (nm)	ε_{max} (M-1cm-1)	λ_{fl} (nm)	η_{fl} (%)	τ_{fl} (ns)	CF_{280}	Substitutes for	Suitable light source
Atto390	390	24000	479	90	5.0	0.08		Mercury arc lamp
Atto488	501	90000	523	80	4.1	0.10	Alexa488[1], FITC, FAM[2]	Argon-Ion laser
Atto532	532	115000	553	90	3.8	5.0	Alexa532[1], HEX[2]	Argon-Ion laser, Nd:YAG laser
Atto550	554	120000	576	80	3.6	0.6	TAMRA[2], Cy3[3]	Mercury arc lamp, Argon-Ion laser, Nd:YAG laser
Atto565	563	120000	592	90	4.0	5.0	Cy3.5[3], ROX	Nd:YAG laser,
Atto594	601	120000	627	85	3.9	0.6	Alexa594[1]	Mercury arc lamp
Atto633	629	130000	657	20	2.4	5.0	Cy5[3] , Alexa633[1]	He-Ne laser, Diode laser
Atto647	645	120000	669	65	3.5	0.6	Cy5[3], Alexa647[1]	He-Ne laser, Diode laser, Krypton-Ion laser
Atto647N	644	150000	669	30	1.7	5.0	Cy5[3] , Alexa647[1]	He-Ne laser, Diode laser, Krypton-Ion laser
Atto680	680	125000	700	25	1.6	0.6	Cy5.5[3]	Krypton-Ion laser
Atto700	700	120000	719	10	0.5	5.0	Cy5.5[3]	Krypton-Ion laser

[1] Trademark of Invitrogen Corporation, [2] Trademark of Applera Corporation, [3] Trademark of GE Healthcare Group Companies

Constants & Formulas

λ_{abs} (nm)	longest-wavelength absorption maximum
ε_{max} (M-1cm-1)	molar decadic extinction coefficient at the longest-wavelength absorption maximum
λ_{fl} (nm)	fluorescence maximum
η_{fl} (%)	fluorescence quantum yield
τ_{fl} (ns)	real fluorescence decay time, $t_{fl} = \eta_{fl} \times t_0$
CF_{280}	$CF_{280} = \varepsilon_{280}/\varepsilon_{max}$ Correction factor to calculate the degree of labeling (DOL) for dye-protein conjugates.

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